



HIGH SCHOOL APPRENTICESHIP CHALLENGE

Metro-Boston Lab Training Program

The Massachusetts Life Sciences Center (MLSC) High School Apprenticeship Challenge is an innovative after-school program that provides students with laboratory training and offers them the opportunity to apply for lab-based internships at renowned research institutions and life sciences companies. The Metro-Boston Lab Training component of the program is led by The BioBuilder Educational Foundation (BioBuilder) in partnership with the MIT Department of Biological Engineering and LabCentral.



BioBuilder
Educational Foundation



How the Program Works

- **Students** submit an online application through the BioBuilder website (link below). The application includes questions intended to evaluate math and English-language skills. Applications are due on February 28, 2017.
- **BioBuilder** will review applications and select program participants. Beginning on March 23, 2017 for eight weeks, students will attend training sessions twice a week after school to work in biodesign teams and every Saturday morning to work in the lab. These sessions focus on technical knowledge and professional skills.
- **MLSC** will award students who successfully complete the training a \$500 stipend.

Eligibility Requirements

- **Students** must be:
 - Massachusetts public high school students that are at least 16 years old AND currently in their sophomore, junior, or senior year.
 - Underrepresented minority OR economically disadvantaged students (qualifying for free lunch).

For more information, and to apply, please visit:

<http://apprenticeshipchallenge.weebly.com>

Tuesday, Thursday 3:30-5:30
Saturday 9-noon

High School Apprenticeship Challenge 2017

Instructor: Natalie Kuldell
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Week#	Tuesday, 3:30-5:30 @MIT	Thursday, 3:30-5:30 @MIT	Saturday, 9A-noon @MIT 56-322
1	MANDATORY ATTENDANCE THIS WEEK	3/23 Class Orientation	3/25 Lab Orientation
2	3/28 Science/Engineering (Eau that Smell)	3/30 Project groups + Lab Math	4/1 Solution Prep/Microbiology
3	4/4 Science/Engineering (DNA extraction)	4/6 Project groups + Lab notebook keeping	4/8 Titration curves/DNA prep AFTERNOON LAB 2-5PM (ACT)
4	4/11 Science/Engineering (Colorful World)	4/13 Project groups + Lab protocol writing	4/15 DNA digest + electrophoresis
April Vacation week 4/17-4/23			
5	4/25 Science/Engineering (Reading the literature)	4/27 Project groups: Presentations of ideas	4/29 Protein induction + PCR/DNA sequencing
6	5/2 Science/Engineering (Review of Past Projects)	5/4 Project groups + online sequence analysis	5/6 SDS PAGE AFTERNOON LAB 2-5PM (SAT)
7	5/9 Science/Engineering (careers, meet & greet) @LabCentral	5/11 Project groups + Resume writing	5/13 Enzyme assays
8	5/16 Project summaries + program evaluation	5/18 Formal Presentations + graduation event @LabCentral	

Overview

This 8-week program is designed to close any skills gap students may have so they can progress into a successful summer internship in a life science company or academic lab. No student is guaranteed a summer internship but everyone is promised our best efforts to place all students who meet these requirements.

Goals

We will focus on three aspects that lead to successful life science careers

- **Content knowledge:** we will spend several hours each week working with synthetic living systems to gain familiarity with terms and details of science and bioengineering
- **Laboratory techniques:** we will spend several hours each week in a research lab carrying out experiments to train hands and minds for benchwork
- **Professional skills:** we will work in small teams to imagine, research and design a biotechnology. Teams will document then present their ideas – leading to important gains in motivation, initiative, listening skills and experiences interacting with others.

Requirements

Students are expected to bring their best selves to our program. This means students will

- Come with an open mind
- Come with energy to engage with the challenges
- Work collegially and constructively
- Tell people who need to know if there is a problem

Students who fail to attend regularly, who fail to notify instructors of absences or tardiness, who are not paying attention during class or lab, or who are distracted during work times will be asked to leave the program and may not receive the stipend associated with our 8-week onboarding program.

Evaluation

Students will be offered constructive criticism throughout our program. Comfort with scientific content is important but equally important is the motivation and enthusiasm students show for working together, and their ability to listen, to discuss and to accept direction or criticism. Troubleshooting laboratory experiments will be valued at least as much as good hands at the bench.

I have read the above and agree to participate as described.

Signature

Date

Materials

Students will receive four books that must be brought to class every time

- [Lab Math](#)
- [At the Bench](#)
- [BioBuilder: Synthetic Biology in the lab](#)
- a blank lab notebook

Milestones

March 23rd 2017

Orientation meeting:
MIT
Sign commitments

March 25th, 2017

Laboratory
orientation

April 27th, 2017

Midway project
presentations

May 9th, 2017

Meet & Greet event

May 18th, 2017

Final project
presentations and
graduation events